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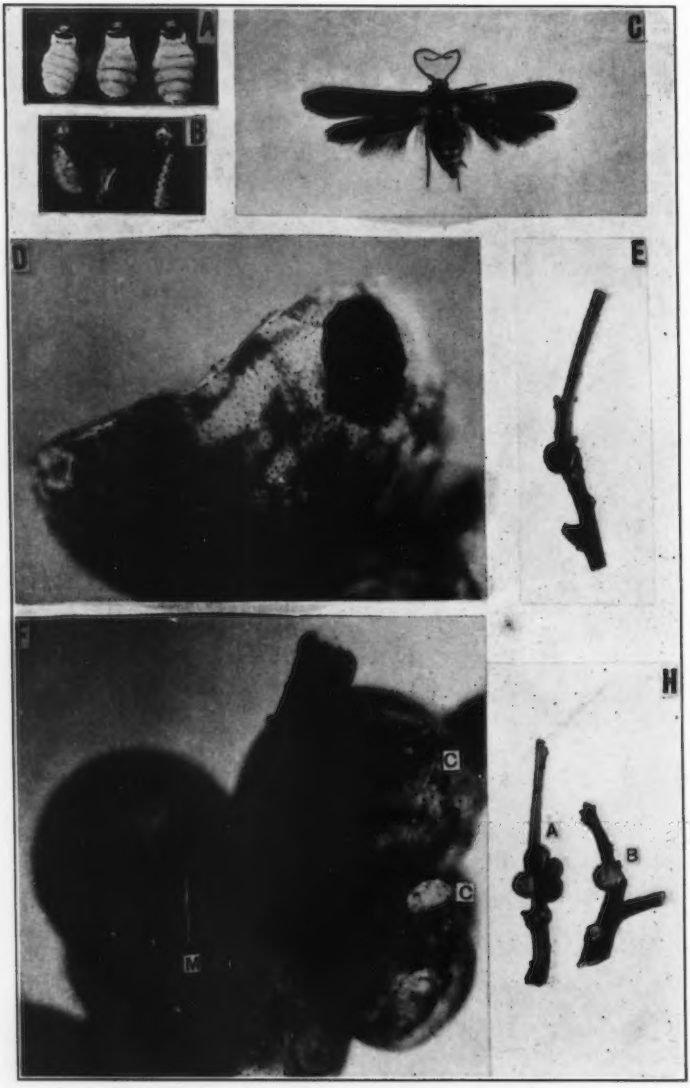

EUCLEMENSIA BASSETTELLA.—HOLLINGER AND PARKS.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

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Euclemensia bassettella (Clemens), the Kermes Parasite (Micro-lepidoptera, Tineoidea, Oecophoridae).

By ALBERT HAROLD HOLLINGER, Bryan, Texas, and HARRIS BRALEY PARKS, College Station, Texas.*

(Plate V.)

HISTORY

In March, 1864, Clemens established the genus *Hamadryas* for a microlepidopteron received from H. F. Bassett, of Waterbury, Connecticut. Clemens named the species in honor of Bassett, and it was known as *Hamadryas bassettella* Clemens until April, 1878. Grote in that year called attention to the pre-occupancy of Clemens' genus *Hamadryas* in the *Lepidoptera* by Hübner and Boisduval, and he proposed the name *Euclemensia* as a generic substitute. It has since been referred to as *Euclemensia bassettella* (Clemens) in literature and in manuscripts.

*The authors' names are alphabetically arranged, and do not denote seniority.

There seem to have been some conflicting notes in literature relative to the habits of this pretty moth (plate V, C). Clemens quotes Bassett, saying: "The species is very common in the neighborhood of Waterbury, Connecticut, and the larva feeds in a gall found on a species of oak which I call *Quercus tinctoria*. The galls are found on the smaller branches, three or four being aggregated, are globular, yellowish-brown, shining and hard."

Comstock (1880*b*)† says that this beautiful moth with reddish-orange-marked fore wings was bred from a large gall-like coccid from Cedar Keys, Florida, and that Riley pointed out to Bassett that his supposed gall was in reality a coccid. Comstock further says: "The rearing of the same moth from what is evidently a closely allied, if not the same, species of coccid from two such widely separated localities as Connecticut and Florida, is a strong indication of the permanence of the carnivorous habit in this species."

Packard (1890*b*) on page 219 of his "Forest Insects" says: "The following species are said by Clemens and Chambers to live on the leaves of various species of oak," and on page 220 *E. bassettella* (Clemens) is listed as a leaf miner of the under surface of oak leaves, with a further note that it feeds in galls. Evidently Packard overlooked Comstock's record.

King (1899) says that in Massachusetts *Kermes galliformis* Riley is attacked by *Euclemensia bassettella* (Clemens).

Britton (1916) states: "Specimens of a *Kermes*, probably *K. sassceri* King, were collected on an oak at Yalesville, April 13, 1916, by B. H. Walden. On examining this material during the summer four specimens of a small moth were found in the box, and in the scales were holes from which the moths had emerged. The moths proved to be *Euclemensia bassettella* (Clemens)."

Lawson (1917) records this moth from *Kermes galliformis* Riley taken at Lawrence, Kansas, and identified by Dr. McDunnough.

Due to the fact that in both Missouri and Texas this oecoph-

†Dates in parentheses refer to the bibliography listed at the end of this article.

orid moth has been reared abundantly from *Kermes* of more than one species, the writers are led to believe that Bassett's "galls" were nothing more nor less than some species of *Kermes,* and that Packard merely copied Clemens' notes which accompanied the original description of this microlepidopteron. This view is strongly emphasized or even substantiated by the records of Comstock, King, Britton and Lawson.

Other Records of Parasitised Kermes.

The only other known records of the genus *Kermes* being infested by lepidopterous larvae are those given below.

Chambers (1878) described *Blastobasis coccivorella,* a species of *Tineoidea* which was reared abundantly from a large coccid, *Kermes* sp. from Florida. Comstock (1880*a*) says that some of the scales were pierced by round holes and entirely eaten out. By dissecting apparently sound ones, he found a few full-grown lepidopterous larvae measuring about eight millimeters long. These were plump, the 4th and 5th abdominal segments being the largest. The general color was milk-white, the head light brown with darker brown mouth-parts. The prothoracic plate was narrow, light brown, and divided longitudinally in the middle. It had six well-developed thoracic legs and five pairs of pro-legs. When the larva began pupating, it first cut an opening through the exterior of the coccid, which up to that time had been entire. Then it spun up a comparatively compact cocoon on the outside of the coccid, attached to the edges of the circular hole.

Dyar (1902), however, does not record Chambers' species at all, and the writers can find no other place in literature where *B. coccivorella* Chambers is mentioned. Is it a synonym of some valid species, or was it entirely overlooked by Dyar in his check-list?

Comstock (1880*a*) described a tineid moth, *Dakruma coccidivora* (=*Dakruma pallida*), which was reared from a species of *Kermes* from Sanford and from Fort George, Florida. He gave the following account of the larval habits of the parasite: "When full-grown the larva leaves the coccid, which it infested, and makes a cocoon which is attached to the outside of

the coccid or to a neighboring twig." *Dakruma coccidivora* Comstock is now known as *Laetilia coccidivora* (Comstock). (Fracker, 1917).

Packard (1890*a*), from some of C. V. Riley's unpublished notes, states that: "These scales from Silver City, New Mexico, were infested with the larvae of a lepidopteron apparently belonging to *Laetilia* (= *Dakruma*)," which issued in April, 1881. It is quite possible that this species is the same as that described by Comstock (1880*a*).

Distribution.

Euclemensia bassettella (Clemens) has been reported in literature from the following states: Connecticut, Florida, Kansas, Massachusetts and Texas. Having found it to occur abundantly in both Missouri and Texas, we believe it safe to say that this parasitic lepidopteron is generally distributed at least over the eastern half of the United States. It is our further opinion that this species will be found to occur in nearly every state east of the Rocky Mountains, and possibly even throughout the extent of this country.

Occurrence in Missouri.

While on a collecting trip the twenty-sixth of April, 1917, Parks was attracted by a pair of downy woodpeckers, *Dryobates pubescens medianus*, which were working arduously in a clump of watersprouts of a shingle oak, *Quercus imbricaria* Michx., near Albany, Gentry County, Missouri. Subsequent investigation showed that the oak was heavily infested by *Kermes pettiti* Ehrh., (plate V, H). Each bird detached a *Kermes* and then placed it securely in a fork made by two twigs or in some roughened crevice in the old trunk. After some little hammering and pecking they withdrew something from the interior of the *Kermes* and swallowed it. They would then look for another coccid and after finding one to their liking they would again go through a similar procedure. In all cases they left the hard shell of the dismembered *Kermes* behind them.

Later investigation showed the presence of white lepidopter-

ous larvae (plate V, A) within many of the gall-like coccids. With exception of a few *Kermes* that the birds had opened in *situ,* no attached specimens showed the presence of abnormal conditions at this date, (plate V, Hb).

Much of the *Kermes* material was given over to Hollinger, and it was placed in the laboratory in a rearing cage on the ninth of June. The first moth appeared on the twenty-seventh of June and by the middle of July twenty-three moths had emerged and which were identified as *Euclemensia bassettella* (Clemens) by Mr. A. Busck, of the United States Bureau of Entomology. On the twelfth of July some of the apparently normal *Kermes* were opened, and from these were obtained three larvae and four pupae.

The adult moths have been observed in July, 1917, by Dr. L. Haseman, Entomologist of the Missouri Agricultural Experiment Station. They were frequenting the blossoms of the garden onion. Hollinger collected an adult on the fifteenth of August flying in his own garden. These two records of the moths flying at large, with exception of a recent additional record from Texas, are the only ones that have come to the attention of the writers.

Occurrence in Texas.

Since the writing of the first draft of this article, the writers have removed to Texas. Our new positions have given us unusual opportunity to observe the occurrence and habits of *Euclemensia bassettella* (Clemens) in that state.

Early in January, 1918, a remarkable infestation of *Kermes galliformis* Riley was discovered on *Quercus stellata* Wang. near Corsicana, Navarro County, Texas. The *Kermes* were in such large numbers that many limbs had succumbed to their attack. Investigation revealed the fact that the coccids were heavily infested by the euclemensid larvae. From specimens collected the adults emerged in the laboratory about the middle of July. Numerous other severe infestations have been under observation, and the following list will give the host plants and the locality from which *Euclemensia*-infested *Kermes* have been reared, together with the dates of emergence of the adults.

Quercus marilandica Muench		
Black Jack Oak.....	Anderson County...	July, 1918
	Brazos County.....	" "
	Henderson County..	" "
Quercus stellata Wang, Post Oak..	Brazos County.....	" "
	Fannin County.....	" "
	Navarro County.....	26 July, 1918
	Robertson County...	July, 1918
	Van Zandt County.	" "
Quercus virginiana Mill, Live Oak.	McLennan County...	24 July, 1918
	San Patricio County.	July, 1918
	Travis County	" "
Quercus undulata Torrey		
Shinnery Oak	Comanche County ..	" "
	Crosby County	26 July, 1918
Quercus nigra L., Water Oak.....	Brazos County	July, 1918
	Cook County	" "
	Grayson County	" "

On the third of August, 1918, a single adult *Enclemensia bassettella* (Clemens) was collected by Parks in Robertson County from the flowers of cultivated onions. This is the only adult that has been seen flying at large in Texas.

Habits.

When the larva (plate V, A) becomes full-grown, it cuts a circular to oval hole about one or one and one-half millimeters in diameter through the hard body-wall of the host (plate V, D, F, Ha). This hole is then closed securely with a thin, tough mesh of silken threads (plate V, Fc), after which the larva crawls backward to the end of its retreat. Here it transforms to the pupal stage, which is naked, (plate V, B) no cocoon being spun.

In all the infested *Kermes* examined, the larva apparently produces a more or less distinctly "U-shaped" retreat or burrow, (plate V, E) living entirely within this division and not working at large throughout the body of the *Kermes*. This retreat occupies the lower half of all the infested hosts and nearly comes together at the ends, yet leaves a small space between the ends of the "U."

After emerging from its pupa, the moth in some way breaks the strands of silken threads over the opening cut by the larva

and makes its escape (plate V, Fm). While most of the larvae inherit the instinct to cut the hole through the body-wall of the *Kermes* large enough for their bodies to pass through, some apparently fail to make the exit holes quite large enough for the adults to leave their hosts, for several imagoes have been found dead in their retreats with their heads through the openings or with parts of their bodies through the exit holes (plate V, Fm), not being able to enlarge in the least the hole through the hard body-wall of the *Kermes*.

Supposed Occurrence in Galls.

At Corsicana, Navarro County, and at Bryan, Brazos County, Texas, some limbs of post oaks, *Quercus stellata* Wang., bore numerous specimens of *Kermes galliformis* Riley which were badly infested by this oecophorid parasite. They also bore numerous hymenopterous galls which resembled in size and shape the specimens of *Kermes*. Many of these galls contained clean-cut holes resembling in general appearance those made by *Euclemensia bassettella* (Clemens). In order to ascertain whether or not Bassett, as quoted by Clemens (1864), and Packard (1890*b*) were correct in their previous statements that this lepidopteron bred in galls, many of these galls were collected and enclosed in rearing cages. Some time in July several specimens of a large hymenopterous insect emerged from the gall material. Specimens sent to Dr. Howard on thirty-first of July were returned in early August with the following notes: "The insect which you considered to be a gall-maker is a species of *Callimome*, not a gall-maker, but a parasite on some gall maker. It is a Chalcidid of the family *Toryminae*, but undeterminable specifically. It is possible that it is a parasite of the *Euclemensia*."

The writers would refute this latter possibility, however, because the several hymenopterous galls were placed in separate rearing jars from the *Kermes* material, and from the gall material *Hymenoptera* alone emerged. Furthermore, there is no possibility of *Callimome* being a parasite of *Euclemensia bassettella* (Clemens) because the writers have never reared the lepidopteron from the galls nor have lepidopterous larvae

ever been found within these galls when they were dissected. In all cases various sized hymenopterous larvae were found after dissection of the galls. On the other hand, no *Hymenoptera*—not even *Callimome*—have ever been reared by the writers from any *Kermes* either in Missouri or Texas. All dissections of parasitized *Kermes* have shown lepidopterous larvae and never hymenopterous grubs.

DESCRIPTION.

The larva (plate V, A) is a whitish grub about five millimeters long and two millimeters in diameter at the fourth and fifth abdominal segments. The head and the first thoracic segment are chestnut-brown. The pro-thoracic segment is marked longitudinally with a narrow white line which continues along the vertex and down either side of the front to the margins of the clypeus. The pairs of short thoracic legs are edged with chestnut-brown. The pro-legs occur on the third, fourth, fifth, sixth and tenth abdominal segments, and are apparently not much developed. Each pro-leg has the crochets or hooks arranged in a uniordinal circle. Fracker (1917) gives as one of the characters of the *Oecophoridae*, the family to which *Euclemensia bassettella* (Clemens) belongs, the biordinal circle of crochets. Evidently *E. bassettella* (Clemens) is an "exception that proves the rule," for it has a clearly defined uniordinal arrangement. The body is but sparsely dotted with setae. The spiracles are small, brownish, and circular.

The pupa (plate V, B) is light brownish in general color, measuring about four millimeters in length and about two millimeters in diameter at its middle. The abdomen, in general, is a cream color, and the spiracles are distinctly marked with brownish. The dorsal terga are slightly chitinized with brown. The empty pupal case is a uniform yellow-brown.

Inasmuch as the original description of the adult is excellent and undoubtedly inaccessible to some readers, the writers have thought best to reproduce it verbatim (Clemens, 1864).

"Fore-wings bright reddish-orange, sometimes tinted with yellowish-orange, with a black spot at the base of the fold of the wing and a broad black stripe showing bluish or greenish reflections along the inner margin extending from the middle of the fold to the tip of the wing and occupying nearly one-half the breadth of it. Along the costa, about the middle of it, is a shining black stripe, which becomes narrower as it approaches the apical third of the wing. Cilia blackish. Hind wings shining, dark greenish-black. Head and thorax black. Antennae black. Labial palpi yellowish-orange." (plate V, C).

Chambers (1878) later notes color variation in *Euclemensia bassettella* (Clemens) ranging from "sulphur to almost brick-red."

Summary.

The writers desire to emphasize the following points:

(1) *Euclemensia bassettella* (Clemens) is a *Kermes* parasite and not a gall feeder as has been reported.

(2) *Euclemensia bassettella* (Clemens) larvae have habits differing from those of other *Kermes*-infesting *Lepidoptera.*

(3) There would appear to be but one generation of this lepidopteron a year.

(4) No parasites are known to attack any stage of this *Kermes* parasite.

(5) *Euclemensia bassettella* (Clemens) is undoubtedly more widely distributed than its records show.

(6) In a few cases this parasite has been abundant enough to materially reduce the coccids' numbers.

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EXPLANATION OF PLATE V.

A—dorsal view of three larvae of *Euclemensia bassettella* (Clemens) (about x3)

B—dorso-lateral and ventral views of three euclemensid pupae (about x3)

C—dorsal view of imago with wings expanded (about x3), showing the relative and comparative sizes of the wings and the broad fringe of cilia.

D—lateral view of *Kermes pettiti* Ehrh. (about x14), showing oval exit hole of *Euclemensia bassettella* (Clemens). The upper half of this *Kermes* was pecked away by woodpeckers, leaving the covered "U-shaped" retreat shown in Fig. E.

E—*Kermes pettiti* Ehrh. (about x1) in situ on an oak twig; dorsal view of *Kermes* shown in Fig. D, showing the covered "U-shaped" retreat of a larva of this euclemensid parasite.

F—aggregation of three infested and one apparently uninfested *Kermes* (about x10), showing: (c) the silken coverings over exit holes and made by the larvae of *Euclemensia bassettella* (Clemens) but broken by the emergence of the adults; (m) an adult moth in the act of emerging from her *Kermes* host. However, this particular one died in the larval retreat, due to the fact that the larva had not cut a large enough exit hole through the body-wall of the host for the imago to escape from.

H—*Kermes pettiti* Ehrh. (about x1), showing: (a) group of specimens in Fig. F; and (b) a normal uninfested *Kermes*.

A new Species of Copaeodes (Lep.).

By HENRY SKINNER.

Copaeodes chromis n. sp.

Color of all wings deep chrome. Primaries have a brown border 2 mm. wide, which extends from near the middle of the costa to the middle of the inner margin. The stigma is a narrow line at the end of the discoidal and it runs parallel to the outer margin.

The secondaries have the costal margin brown.

Undersides same color as above and immaculate except for a small brown spot at the base of the primaries.

Head, thorax and abdomen deep chrome. Expanse 25 mm.

Described from one male (?) specimen from Colima, Mexico.

Type in the collection of The Academy of Natural Sciences of Philadelphia. It resembles *procris* but the primary wings are more rounded and *procris* does not have bordered wings.

A Resurrected Paper on Mosquitos and Malaria (Diptera).

By Harry B. Weiss, New Brunswick, New Jersey.

Mr. George A. Osborn, Librarian of Rutgers College, recently called my attention to a paper entitled "The Mission of the Mosquito" by J. Suydam Knox, which appeared in Vol. I, 1873, of "Our Home, a Monthly Magazine of Original Articles, Historical, Biographical, Scientific and Miscellaneous," mostly by Somerset and Hunterdon County (New Jersey) writers on subjects largely pertaining to these counties, edited by A. V. D. Honeyman, attorney-at-law, Somerville, New Jersey.

Mr. Knox starts out by quoting Josh Billings on the mosquito and describes at length its method of securing a meal. He also states that during the summer of '67, while resident surgeon of one of the hospitals of the city of B., he determined to investigate the mission of the mosquito. Vast numbers of specimens were caught, their heads separated and macerated in alcohol.

"The tincture was then strained, boiled, filtered and set aside to cool. Slowly small white crystals formed on the bottom. They were evaporated to dryness and examined. Eureka, the question was solved. They were isomeric with quinine. Their chemical composition was the same, C 30 H 12 N O. 2. They presented the same fluorescent appearance when dissolved in water. The same reaction occurred in chlorine and ammonia. The sole difference was their influence on polarized light, producing deviation of the plane to the right instead of the left. The mission was found. The question of ages was answered. The mosquito carried in its sting the antidote to malaria."

After remarking upon the presence of mosquitos in districts where fever and ague prevailed, the results of further experiments are given as follows:

1. Blood was drawn from the arm of a patient and examined: a mere trace of quinine was found. Said patient was bribed to expose himself to mosquitos and then bled. Abundance of quinidia was found in the vital fluid.

2. Three patients, suffering from ague, were selected and placed in separate rooms. One was given a solution of quinine and rigidly excluded from mosquitos. The second received a solution of morphia, and was also excluded from the insects. The third received a similar

solution of morphia at night to induce sleep, and was freely bitten. The first and third recovered. The second still had ague. Here in the first case quinine cured as was expected. Of the other two, who took only morphine, he alone was cured who was freely inoculated with the virus of the mosquito.

3. With much care, sufficient of the chrystals of quinidia were obtained to make a saturated solution for experiment. And among the many ague patients of the hospital, twelve were chosen as near alike as possible in age, constitution and violence of disease. Six were treated with hypodermic injections of the solution of the virus and six with similar ones of solution of quinine. All twelve recovered. But those injected with the virus of the mosquito got well in one-third less time than the remaining six.

In "The Mosquitos of North and Central America and the West Indies" by Howard, Dyar and Knab, Vol. I, p. 188, under "Early Ideas," appears a statement, by Dr. Samuel W. Francis from his paper entitled "Curious Facts Concerning Man and Nature with a Few Practical Suggestions on Other Subjects," 1874, to the effect that in a previous work of his entitled "Life and Death," p. 210, Mar., 1871, mention is made that

"The time will come when it will be publicly acknowledged that the little fluid they (the mosquitos) inject into your blood contains certain specific properties for different diseases. To prove that I am right, let any skillful chemist test the powerful drop contained in a mosquito's sack and he will find many of the properties of Quinine."

The statements of both Knox and Francis are curious instances of a conclusion diametrically opposed to the right one having been drawn from practically the same premises.

In the "History of Hunterdon and Somerset Counties, N. J.," compiled by J. P. Snell, 1881, the following brief biographical account of J. Suydam Knox is given:

Born July 26, 1840, graduate of College of New Jersey, 1860; of Physicians and Surgeons, N. Y. City, 1866; City Hospital, Brooklyn, 1868; practiced in Somerville, N. J., from 1866 to 1873 when he removed to Chicago, and became lecturer and clinical professor in Rush Medical College.

Change of Address.

I am giving up my position as Curator of the Barnes Collection to accept a post in the Entomological Branch of the Department of Agriculture at Ottawa, Ontario. I expect to commence my new duties April 1st.—J. McDUNNOUGH.

Two Species of Phylloxera from California (Hemiptera; Aphidae).

By G. F. Ferris, Stanford University, California.

The western portion of the United States appears to be very poorly supplied with species of *Phylloxera*. Aside from the notorious pest of the vine there appear to be but two species known from California, Davidson having recorded *P. popularia* Pergande from poplars and *P. salicola* Pergande from willow. I am here describing an apparently new species from oak, perhaps the first to be recorded from oak west of Missouri, and am presenting some notes upon one of the other species.

Phylloxera stanfordiana n sp. (Text figs. B, D.)

In life. Occurring upon the twigs of the host, concealed beneath any chance covering, especially numerous under the twig-encircling egg masses of a moth, (possibly *Malacosoma disstria.*) Entirely destitute of any secretionary covering; of a light yellow color.

Apterous female. Length (flattened on slide) .75 mm. Shape somewhat pyriform. Dorsum entirely destitute of pores, bearing a few very minute spines, of which those on the head are borne upon slight prominences. Derm minutely roughened in the cephalic region, elsewhere quite smooth. Beak reaching somewhat beyond the posterior legs, five-segmented. Antennae with the third segment somewhat longer than the other two combined and rather prominently annulated; sensoria, if present at all, borne at the extreme tip of the third segment. Abdominal spiracles apparently lacking.

Type host and locality. From *Quercus douglasii*, on the campus of Stanford University, California; Sept. 10, 1918. Collected by the author. *Holotype* and paratypes in the Stanford collection.

Notes. This probably belongs to the group of *P. rileyi* and *P. querceti*, but the almost obsolete dorsal tubercles and the absence of a conspicuous sensorium on the third antennal segment separate it at once. Attention should be called to the apparent absence of abdominal spiracles. I find the same condition in specimens of what I take to be *P. rileyi* and in the species later to be discussed in this paper as *P. salicola*. In *P. vastatrix* the abdominal spiracles are certainly present.

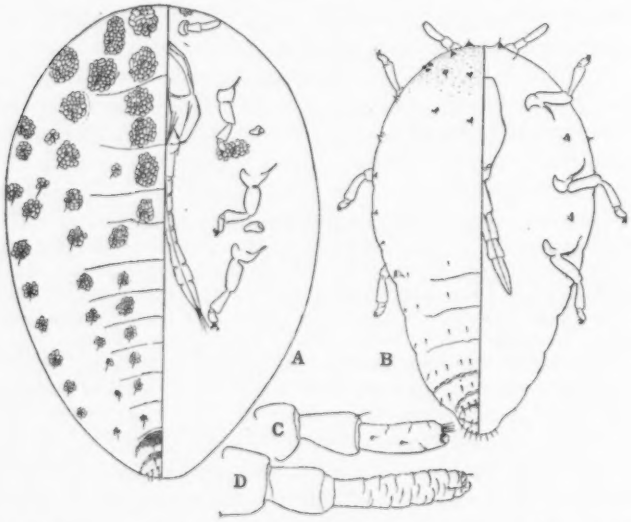
Phylloxera salicola Perg.? (Text figs. A, C.)

1904. *Phylloxera salicola* Pergande, Proc. Davenport Acad. Sci., Vol. 9, pp. 267-69, pl. XXI, figs. 161-168.

1015. *Phylloxera salicola* Perg.; Davidson, Jn. Ec. Ent., Vol. 8, p. 419, pl. 25.

In life. Exposed upon the bark of the host, chiefly on the smaller twigs. Entirely covered with wooly, white secretion.

Apterous female. Length (flattened on slide) .9 mm. or less. Shape regularly oval, slightly more pointed posteriorly. Dorsum with numerous areas of pores, these arranged in three more or less definite, longitudinal rows. Each cluster of pores is grouped around a small spine,



A, C.—*Phylloxera salicola* Pergande (?); apterous female and antenna of same. Specimen from *Populus trichocarpa*.

B, D.—*Phylloxera stanfordiana* n. sp.; apterous female and antenna of same. All figures drawn to same scale.

the clusters on the head being largest, the others becoming progressively smaller posteriorly. Derm otherwise smooth, not at all roughened or beset with fine points. Last two segments each with a small, transverse, chitinized area. Ventrally there is a small cluster of pores behind each of the first pair of spiracles. Antennae short, the third segment about as long as the other two combined, annulations few and

very faint, extreme tip apparently with a small sensorium. Beak reaching somewhat beyond the posterior legs, eight-segmented. Abdominal spiracles apparently lacking.

Hosts. From *Populus trichocarpa* and *Salix* sp., San Francisquito Creek, near Stanford University, California, and from *Populus candicans,* Salt Lake City, Utah, (R. W. Doane, coll.).

Notes. I am inclined to regard it as somewhat doubtful that this is really *P. salicola* Perg. The original description lacks definiteness in regard to the most important details and the figure is somewhat impressionistic but it is obvious that the species at hand is at least close to *salicola.* It certainly is not *P. popularia* Pergande as the latter is described and figured as having the dorsum thickly beset with minute points. The description and figures here presented, will, it is hoped, aid in clearing the matter up.

I am entirely unable to separate the specimens found on poplar from those found on willow, the only visible difference being that the abdominal groups of pores are perhaps a trifle larger in the specimens from the latter host. In the specimens from poplar in Utah, this difference is quite noticeable, the number of pores in all the groups being much reduced, some of those toward the posterior end of the abdomen being entirely lacking.

It may be noted that the above descriptions are based upon carefully stained material.

The Naiad of the Odonate Genus Coryphaeschna.

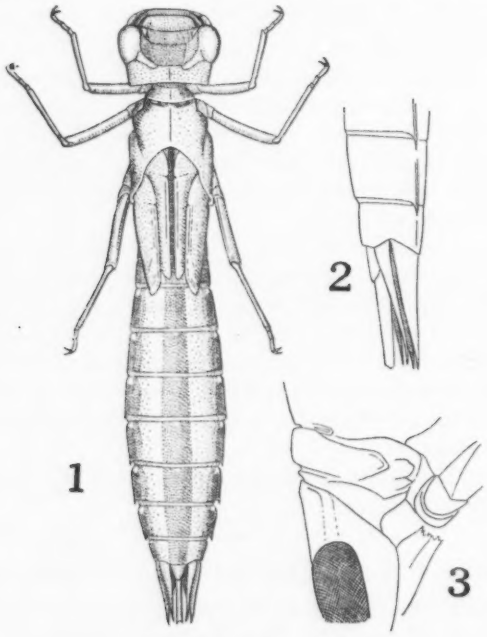
By CLARENCE HAMILTON KENNEDY, North Carolina State College, West Raleigh, North Carolina.

Recently while examining Mr. Brimley's collection of interesting southern Odonata the writer was shown among other immature specimens the largest aeshnine naiad* he had ever seen—a regular behemoth of a naiad. Mr. Brimley believed

*See Comstock. Ann. Ent. Soc. Amer., 1918, vol. XI, pp. 222-224. I have adopted Prof. Comstock's term for the immature state of the Odonata. It is a most happy term for distinguishing the immature stages of the aquatic orders.

it to be *Coryphaeschna ingens,* but very kindly suggested that the writer try to identify it more definitely and describe it.

This specimen was taken by Mr. Brimley, May 26, 1908, at Lake Ellis, Craven County, which is in the lowlands of southeastern North Carolina. It was found on the shores of the lake and had died in the act of emergence, for the skin had



Coryphaeschna ingens naiad.

Fig. 1.—Dorsal view, natural size.
Fig. 2.—Lateral view of appendages.
Fig. 3.—Lateral view of prothorax showing the lateral process of the middle lobe and the supracoxal processes.

split and the thorax protruded in a large hump, but no part of the imago had been withdrawn from the naidal skin. The genus was determined by removing a wing pad and boiling the crumpled wing in caustic potash while the species was checked by elimination as no other species in the genus has been re-

corded so far north, and by the shape of the appendages which were fully expanded within the abdominal skin, as good fortune had let this be a male. The following is the description:

Total length 65 mm., abdomen 44 mm., hind femur 8 mm.; width of abdomen 10 mm.

Body elongate, slender, smooth; a narrow sharply defined stripe down the middorsal line of the abdomen, a lateral stripe twice the width of the dorsal stripe above each lateral keel; legs probably obscurely banded in life.

Head slightly concave behind, its posterior margin being a thin edge; the hind angles are almost right angles, obtuse but well defined and not rounded, neither do they carry any spines or other armature; sides of head straight, diverging cephalad slightly, three-fifths as long as the eye. The labium is missing, but from the very flat under surface of the head it is wide anteriorly and from the shape of the submentum extends at least posterior to the first coxae. Antennae seven-jointed, minute.

Prothorax with the median lobe terminating laterally in a prominent, obtusely rounded point which is larger than either supracoxal process; posterior supracoxal process more than twice the size of the anterior one, its point rounded. In life probably the hind wing pads extend to the apex of abdominal segment 3. The legs are noticeably small for so large a naiad because when these are extended the claws of the hind leg reach only to the middle of segment 5.

Abdomen widest at segments 5-7, whence it tapers regularly cephalad to segment 1, which is two-thirds as wide, and caudad to segment 10, which is one-half as wide. Segment 10 is one-half as long as either segment 5 or segment 6. There are lateral spines on segments 6-9, but all are small, slender and acute, those on segment 6 being minute and easily overlooked. The superior appendage and ventral paired appendages are equal in length and two and one-third times as long as segment 10. The dorsal paired appendages are subequal to the others and very slender. The superior appendage is slender, widely cleft at the apex and has a single, dorsal tubercle directed caudad placed at one-third of the distance from base to apex.

This naiad resembles those of the genus *Aeshna* in the majority of its characters, especially in having lateral spines on segments 6-9 and in having a single tubercle on the superior appendage of the male. It differs from the known naiads of the North American Aeshnas in having the dorsal paired appendages with their length scarcely less than that of the others

and in having the posterior angle of the head thin-edged and more angulate than in any described *Aeshna*. It differs from *Anax* in the small eye, the angulate head and in having, in this male skin, but a single tubercle on the superior appendage where there is a pair in the latter. It differs from *Boyeria, Nasiaeschna, Basiaeschna* and *Epiaeschna* in having the appendages all of approximately equal length.

The specimen described has been deposited in the Academy of Natural Sciences of Philadelphia, Pa.

Descriptions of New Species of Coleophora (Microlepidoptera).

By ANNETTE F. BRAUN, Cincinnati, Ohio.

The following paper contains descriptions of a number of species of *Coleophora* reared by the writer. Of these here described, one, *C. viburniella* Clemens, was previously named from case and larva. *C. cretaticostella* Clemens was described from flown specimens, without knowledge of the life history. The remaining five are described as new. As far as the writer can determine from comparison with published descriptions of species taken only in the imaginal state, none of these has been described before. It has not been possible to make a comparison with types. In connection with the matter of types, it may be well to call attention to some remarkable statements of Chambers made in "Correspondence" with the Canadian Entomologist (Vol. IX, pp. 38-40). Here, after remarking that he seldom took the trouble to pin and spread common species at all, Chambers makes this statement: "But a few years ago I began to make a collection to be preserved as types of all my species. These were all pinned and spread. Unfortunately, during my absence in Colorado, the greater part of this collection was destroyed. One or more specimens of the greater number of species were fortunately preserved, and most of the other species can be supplied. This collection is now in the Cambridge Museum. It contains types—pinned and spread—of something over 200 species." It may well be

doubted whether in a genus such as *Coleophora,* where the species require such careful discrimination, Chambers' types always represent the actual species described. Only where the type is in the best condition of preservation, could most species be determined with certainty. It is not, therefore, in my opinion, advisable to withhold from publication descriptions of species whose life history is known, because the certainty of future easy determination of such species will far outweigh any disadvantage occasioned by the possible creation of synonyms.

Coleophora apicella n. sp.

Head shining brassy; palpi simple; basal four-fifths of the antennae black slightly thickened with scales, apical fifth silvery white, with each segment marked beneath with a minute black spot. Thorax brassy. Fore wings lustrous brassy at the extreme base, shading outwardly into reddish bronze or deep blue according to the light. Hind wings, legs and abdomen dark brown, with a slight brassy lustre. Expanse: 9.5-11 mm.

Locality: Cincinnati, Ohio. *Type* (♀) and paratypes (two males, seven females) in the writer's collection.

The larval cases are found on the lower side of the rosette leaves of the fire pink (*Silene virginica* L.). The summer case, which is spun entirely of grayish silk, is cylindrical, three-valved at apex, with mouth scarcely or not at all deflexed. This case is gradually enlarged during the summer, but retains its general shape until the following spring, when the larva resumes feeding on the overwintering leaves. In the formation of the mature case, the overwintering case is split open and may be distinguished as a darker gray patch occupying about one-half the dorsal surface of the completed case. The mature case is cylindrical, 7 to 9 mm. long, with slightly deflexed mouth, the silk between the mouth and the old part of the case roughened and wrinkled transversely; it tapers somewhat posteriorly, flaring again to form the conspicuously three-valved apex. The larvae feed until about the middle of May; imagos, May 31 to June 10.

The moth is distinguished from the other bronzy metallic species by the silvery apical fifth of the antennae.

Coleophora viburniella Clemens.

Coleophora viburniella Clemens, Proc. Ent. Soc. Phila., I, 79, 1861; Tin. No. Am., 167, 1872.

This species was originally named from larva and case; the characteristic case described by Clements renders its recognition certain. Three cases with larvae feeding on black haw (*Viburnum prunifolium* L.) were collected August 27, in Clermont County, Ohio. From these one moth was reared, emerging May 30 of the following year. The description of the imago follows.

Head white, slightly tinged with yellow; palpi white with a little fuscous on the under side. Antennae with the basal segment enlarged with a yellowish white tuft projecting in front and a little at apex; stalk white, annulate with dark brown.

Thorax and base of fore wings whitish. The wings shade into straw color, which becomes deeper toward apex and slightly coppery-tinged. Hind wings grayish, toward the apex becoming concolorous with the fore wings. Legs white. Abdomen white beneath, grayish yellow above and fuscous along the mid-dorsal line. Expanse: 11.5 mm.

Three cases are cut from the leaf; the first cut from a mine in the middle of the leaf, the second and third from the margin of the leaf. Before forming the second case, the first is attached at the margin of the leaf, from which the larva mines into the leaf, and then cuts out a triangular piece of leaf, of which the angle projecting into the leaf forms the mouth, the other angles of the triangle at the leaf margins forming the projections "near the hinder end above and below" of which Clemens speaks. The third case is formed likewise by the addition of a triangular piece of mined leaf, similarly cut. Here, however, the second case is attached very near the long very oblique cut which forms the lower edge of the case. The upper edge of the case is formed of a shorter slightly oblique cut and the serrated margin of the leaf (the two remaining sides of the triangle); the resulting pointed flat projection constituting the "flattened wing-like appendage." The surface of the case is doubly convex in a line from mouth to apex, the projections on each side remaining flat. Length of case 10 mm.; height of wing-like appendage above the case 2.5 mm.

When collected, the larvae were in process of constructing the last case, and continued to feed for about six weeks.

Coleophora cretaticostella Clemens.

Coleophora cretaticostella Clemens, Proc. Acad. Nat. Sci. Phil., 1860, 5; Tin. No. Am., 89, 1872; Chambers, Can. Ent., VII, 124, 1875; X, 112, 1878; Busck, Proc. Ent. Soc. Wash., V, 192, 1903.

I have eleven specimens reared on blackberry, two captured specimens from Cincinnati and one captured specimen from Bedford, Massachusetts, which I refer to this species. The general ground color is a shining ocherous, deepest in the apex and along the border of the broad white costal streak, becoming much paler, and in worn specimens whitish toward the dorsal margin. It is only somewhat worn specimens which show the streaking with ocherous, really due to the slight abrasion of the surface along the veins. The scales thickening the basal segment of the antennae form, in perfect specimens, a tuft projecting not only in front but for the length of two segments at the apex.

The cases are found on the under side of leaves of blackberry, the larvae mining into the leaves during late summer and fall, and in the spring feeding on the young leaves which they skeletonize in irregular patches. Four cases are cut from the mined leaf, of which the third and fourth show on the dorsal edge the serrations of the margin of the leaf. Usually a portion of the earliest case and often part of the second are lost before the fourth piece of leaf is added. In cutting this last portion of the case, the preceding case is attached on the under side of the leaf near the margin so that when first constructed, this portion of the completed case is not in a line with the earlier portion. The larva winters in this case, which is at this time flattened, with the separate leaf fragments of which it is constructed easily distinguishable, and shows the leaf serrations along its upper edge; the lower edge is undulating with a distinct projection marking the hind end of the last leaf fragment. The case becomes much worn during the winter, and where the larvae winter on the food plant in the open, the serrations on the dorsal edge, and often much of the leaf covering of the case are worn off. In the spring the case is rounded out, further strengthened with silk which may partially cover the worn leaf surfaces, so that the mature case often bears slight resemblance to the case of the fall before. This case is evenly curved backward on its dorsal surface; on

the under surface there is a slight hump about two-thirds from the mouth, behind which the case narrows abruptly to the rather pointed two-valved apex.

The moths appear from May 30 to June 10; the Massachusetts specimen is dated June 20.

(To be continued.)

An Aberration of Polygonia progne (Lepid.).

By LAURENCE V. COLEMAN, Jamaica Plains, Boston, Massachusetts.

Polygonia progne, ab. nov. **martineae.**

Expanse—54 millimeters.

Upper Side—Primaries have the usual ferruginous marginal band and submarginal patch at the inner angle suffused, forming a broad marginal band of ferruginous, dusted along the margin with greyish

Polygonia progne, aber. nov. *martineae.*

lilac scales which are most numerous near the apex and at the inner angle. Within the ferruginous border is a narrow irregular band extending the entire width of the wing. Its anterior third is pale yellow, which shades posteriorly into the fulvous ground color of the normal form. The discal area of the wing is occupied by a large, subtriangular, rich ferruginous patch, extending from the costa almost

to the inner margin. Its inner boundary forms an obtuse angle, while its emarginate outer edge encroaches deeply upon the narrow fulvous band where it is crossed by the two branches of the cubitus vein. The basal area is of the typical fulvous ground color, which also extends narrowly along the inner margin of the wing to join the fulvous submarginal band. The center of the discal cell is marked by the two usual spots. The costa is concolorous with the broad marginal band. *Secondaries* are of a rich ferruginous color shading into well defined greyish lilac along the costal and outer margins and on the tail. The fulvous basal area and submarginal band of the primaries are continued faintly on the secondaries. The dark color between these bars gives the wings a general appearance of being crossed by a single dark band on a slightly lighter field.

Under Side—The pattern and colors are essentially normal except in a few minor respects. *Primaries* have the contrast between light and dark areas less marked than normally, and the entire pattern is somewhat dulled. The usual dark band along the posterior two-thirds of the outer margin is widened, and the greenish metallic crescents along the inner border of this band are enlarged. *Secondaries* show much less contrast between light and dark areas than do the primaries, but more than do the normal secondaries. The greenish crescents, tho' indistinct, are present, and are spaced from the margin to correspond with those in the primaries. The abnormally heavy silver mark is striking. Its vertical limb is 0.5 mm. wide, while its horizontal one tapers from the same width to a point. Each limb is 1.7 mm. long.

Type—Catalog No. 5500. Peabody Museum, Yale University.

One female without data. The specimen was probably captured in Connecticut, for it was pinned with miscellaneous material from that locality.

"Seventeen Year Grasshoppers."

It is predicted that we are to have the 17-year locusts this summer. This brood of insects have been lying 15 or 20 feet under ground for the past 17 years and now their long sleep is about to end, and when the spring is full on its way the air will resound with their music. This insect is popularly supposed to be a locust, but it is not so. It is a grasshopper, the same that riddled Kansas and other green spots years ago. These interesting insects emerge from the ground at the same moment, betake themselves to trees and ferns, raise their families in a few weeks of aviation and song, then drop to earth, reoccupy their old haunts and resume their slumber for another 17-year period. While mingling with terrestrial scenes they eat up everything they can lay their mouths to and at the same time enjoying a delightful cabaret with their feasting. Of course these grasshoppers will wear a big W on their wings, which always means war. But this a new age and the choir may not appear."—*Newspaper.*

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., APRIL, 1919.

Swat the Fly Versus Starve the Brute.

This is the time of year when we think of many problems in relation to domestic animals and plants. There is a renewed effort to increase the egg-laying capacity of the domestic hen and to decrease the activity of the cootie. The house-fly is a domesticated animal and many so-called sanitarians are waging a war on this dipteron on account of its disease-transmitting proclivities. The cry has been taken up to "swat the fly," and so far as we know the word "swat" was coined by a Kansan who used the term to sell illustrated postal cards. The numbers of *Musca domestica* in a community form a rather exact index of the amount of fermenting and decomposing vegetable and animal matter that has become derelict and misplaced, and if one pair of flies, barring accident, will produce billions of progeny in a single season, their early stages would eat millions of pounds, or thousands of tons, of filth. It is quite possible that this material is a distinct menace to health and man should do his own scavenger work and not shove it on to the proboscis of the poor fly. Buzzards and vultures would not be tolerated and protected as scavengers if they came into our houses and visited the cream pitcher and the butter plate. It is time for our sanitarians to get busy, have all filth removed from cities once a week and starve the fly, and then there would be more time to study the nidification of the hen. The fly swatter could also be relegated to the museum as a curiosity.—HENRY SKINNER.

Crabro montanus Cresson. (Hym.).

Strand, in Archiv für Naturgeschichte, 1916, p. 98, points out that *Crabro montanus* Cresson, 1865, is a homonym of *C. montanus* Gistel 1857, and proposes for Cresson's species the new name *montivagans*. It is hard to understand why he did not at least look in Dalla Torre's catalogue, where he would have found the available name *Crabro cristatus* Packard. In our modern nomenclature, the species will be *Solenius cristatus*.—T. D. A. COCKERELL, Boulder, Colorado.

Capture of Ants by Gummy Exudations (Hym.).

A number of years ago I observed that certain ants (*Myrmica brevinodis*) were attracted by the gummy exudations of broken sunflower stems and, attempting to eat the sticky juice, were snared and finally perished. A specimen showing this was figured and discussed by Wheeler in Bull. Amer. Mus. Nat. Hist., XXII, p. 417. I then surmised that the ants being essentially boreal and the sunflowers austral, there was maladjustment where the ranges overlapped, owing to the relatively short time since the organisms occupied the same area. Dr. Wheeler was skeptical, and a new case which has just come to hand can hardly be explained in the manner suggested, since both types concerned are characteristic of the arid plains. Mr. E. Bethel sends a specimen of the plant *Lygodesmia juncea*, collected at Denver, on which are several workers of *Pogonomyrmex occidentalis*, with their mandibles firmly fixed in the yellow gum. The gum exudes freely from the plants and the ants are caught and die, quite unable to escape. Mr. Bethel assures me that many ants are killed in this way.—T. D. A. COCKERELL, Boulder, Colorado.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new species are all grouped at the end of each Order of which they treat. Unless mentioned in the title, the number of the new species occurring north of Mexico is given at end of title, within brackets.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—Canadian Entomologist, London, Can. **6**—Journal of the New York Entomological Society. **8**—The Entomologist's Monthly Magazine, London. **9**—The Entomologist, London. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **12**—Journal of Economic Entomology, Concord, N. H. **17**—Lepidoptera, Boston, Mass. **19**—Bulletin of the Brooklyn Entomological Society. **23**—Bolletino del Laboratorio di Zoologia Generale e Agraria, Portici, Italy. **54**—Proceedings of the Biological Society of Washington, D. C. **68**—Science, Lancaster, Pa. **69**—Comptes Rendus, des Seances de l'Academie des Sciences, Paris. **79**—Bulletin of

the Museum of Comparative Zoology at Harvard College, Cambridge, Mass. **82**—The Ohio Journal of Science, Columbus. **83**—Proceedings of the Royal Physical Society, Edinburgh. **84**—Boletin de la Sociedad Aragonesa de Ciencias Naturales, Zaragoza. **85**—The Journal of Experimental Zoology, Philadelphia. **86**—The Quarterly Journal of Microscopical Science, London. **87**—Arkiv for Zoologi, K. svenska vetenskapsakademien, Stockholm. **88**—Occasional Papers of the Museum of Zoology, University of Michigan, Ann Arbor.

GENERAL. Ball, E. D.—Economic entomology—its foundations and future. **12,** xii, 24-35. **Foa, A.**—L'epitelio dell'intestino medio nel baco da seta sano e in quello malato di flaccidezza. **23,** xii, 217-44. **Gibson, E. H.**—Relation of the systematist to the economic worker. **19,** xiv, 1-3. **Giulio, C.**—Osservazion sull'influenza della tiroide sullo sviluppo degli insetti (Atti. Reale Ac. d. Lincei, 1918, 376-9). **Hampson, G. F.**—Systematic papers published in the German language. **68,** xlix, 193. **Johnson, C. W.**—Insect collections of a museum. (Museum Work, Am. Assoc. Mus., Providence, R. I., i, 154-8.) **Leng, C. W.**—History of the New York Entomological Society, 1893-1918. **6,** xxvi, 129-33. **Longinos Navas, R. P.**—Insectos Chilenos. **84,** xvii, 212-230. **Nicholson, C.**—Sugaring. **9,** 1919, 43. **Slosson, A. T.**—Reminiscences of the early days of the New York entomological society. **6,** xxvi, 134-7. **Torre Bueno, J. R.**—The far flung field of entomology. **19,** xiv, 24.

PHYSIOLOGY, GENETICS, ETC. Castle, W. E.—Is the arrangement of the genes in the chromosome linear? The linkage system of 8 sex-linked characters of Drosophila virilis. (Proc. Nat. Ac. Sci. of U. S., v, 25-36.)

MEDICAL. Hutchison & Pierce—Studies on the dry cleaning process as a means of destroying body lice. **10,** xxi, 8-20. **Pierce, W. D.**—Some new phases of the entomology of disease, hygiene and sanitation brought about by the great war. **12,** xii, 42-9.

ARACHNIDA AND MYRIAPODA. Barrows, W. M.—Taxonomic position of Mysmena bulbifera (Glenognatha bulbifera) with some observations on its habits. **82,** xix, 210-12.

NEUROPTERA. Williamson, E. B.—Archaeogomphus, a new genus of dragon-flies [from Colombia]. **88,** No. 63.

ORTHOPTERA. Caudell, A. N.—Palmodes praetans and its prey. **10,** xxi, 40. **Pantel, J.**—La calcium dans la physiologie normale des Phasmides: oeuf larve eclosante. **69,** clxi, 127-9.

Davis, W. T.—A new Stagmomantis from Florida. **19,** xiv, 4-7.

HEMIPTERA. Baker, A. C.—Identity of Smynthurodes betae. **10,** xxi, 36-8. **Muir, F.**—Some new [neotropical] American Delphacidae. **4,** 1919, 35-9.

Davis, W. T.—Mississippi cicadas, with a key to the species of the southeastern U. S. [1 new]. **6,** xxvi, 141-55. **Knight, H. H.**—Male of Lygus univittatus with the description of a new Lygus. **19,** xiv ,21-2. **McAtee, W. L.**—Note on nearctic Heteroptera [2 new]. **19,** xiv, 8-16.

LEPIDOPTERA. Ehrmann, G. A.—New tropical American Papilios. **17,** iii, 10-11 (cont.). **Forbes, W. T. M.**—Guenee's Herminidae revived. **6,** xxvi, 224-5. **Kaye, W. J.**—New South American butterflies. **11,** iii, 215-18. **Prout, L. B.**—New and insufficiently known moths in the Joicey collection [some neotropical]. **11,** iii, 165-90. **Unzicker, R.**—Notes on Basilarchia astyanax var. albofasciata. **17,** iii, 9-10.

Franck, G.—Papilio cresphontes, var, maxwelli, nov. **19,** xiv, 3.

DIPTERA. Bezzi, M.—Ulteriori notizie sul gen. Himantostoma Lw. **23,** xii, 272-4. **Brues, C. T.**—The Phoridae of Grenada. **79,** lxii, 499-506. **Edwards, F. W.**—Some parthenogenetic Chironomidae. **11,** iii, 222-8. **Keilin, D.**—On the structure of the larvae and the systematic position of the genera Mycetobia, Dityomyia, Symmerus. **11,** iii, 33-42. **Riley, W. A.**—Occurrence of Drosophila larvae and puparia in bottled milk. **12,** xii, 41. **Stark, M. B.**—An hereditary tumor. **85,** xxvii, 509-22. **Townsend, C. H. T.**—Note on Leskiine synonymy. **10,** xxi, 20. **Wallis, E. F.**—The "singing" of Syrphus ribesii while at rest. **8,** 1919, 33.

Johnson, C. W.—North American D. described by Nils S. Swederus [1 n. name]. **4,** 1919, 32. **Malloch, J. R.**—One new genus and two n. sps. of Anthomyiidae from the vicinity of Washington, D. C. **54,** xxxii, 1-4.

COLEOPTERA, Aurivillus, C.—Neue oder wenig bekannte C. longicornia [some neotropical]. **87,** x, 335-60. **Blatchley, W. S.**—Home of Hormops and its proper position among other Rhynchophora. **6,** xxvi, 155-61. **Burke, H. E.**—Biological notes on some flat-headed bark borers of the genus Melanophila. **12,** xii, 105-8. **Claycomb, G. B.**—Notes on the habits of heterocerous beetles. **4,** 1919, 25. **Hayes, W. P.**—Life-cycle of Lachnosterna lanceolata. **12,** xii, 109-117. **Huie, L. H.**—The bionomics of the tiger beetle (Cicindela campestris). **83,** xx, 1-11. **Munro, J. W.**—The genus Hylastes, and its importance in forestry: a study in scolytid structure and biology. **83,** xx, 123-53. **Nicolay, A. S.**—A list of the Buprestidae and Cerambycidae taken on Long Island, N. Y. **19,** xiv, 17-20 (cont.). **Notman, H.**—Boreaphilus, a genus of staphyli-

nid C. new to No. America [1 new]. **6,** xxvi, 182-89. **Razzauti, A.**—Contributo alla conoscenza del tonchio del faginolo (Acanthoscelides obtectus). **23,** xii, 94-122. **Sharp, D.**—Studies in Rhynchophora. VI. "The New York weevil." **6,** xxvi, 215-18.

Fall, H. C.—New No. American species of Apion [7 new]. **6,** xxvi, 218-23. **Fisher, W. S.**—Note on Macrobasis murina. A new gen. and sp. of Cerambycidae from Colorado. **10,** xxi, 1-2; 38-40. **Leng, C. W.**—A new race of Cicindela, with notes on other races and species. Notes on some changes in the list of C. **6,** xxvi, 138-41; 201-11. **Pierce, W. D.**—Contribution to our knowledge of the weevils of the superfamily Curculionoidea [new gen. & families]. **10,** xxi, 21-36. **Schaeffer, C.**—On some genera and species of the family Ostomidae [12 new]. Miscellaneous coleopterological notes and descriptions [4 new]. **6,** xxvi, 190-201; 211-14. **Van Dyke, E. C.**—Review of the species of the coleopterous genus Silis, which are found in America, north of Mexico [7 new]. A new gen. and sp. of cave-dwelling carabidae from the U. S. **6,** xxvi, 161-79; 179-82.

HYMENOPTERA. Bequaert, J.—Identity of Evania urbana, 1908, and E. punctata, 1832. **19,** xiv, 23. **Cockerell, T. D. A.**—Descriptions and records of bees [some neotropical]. **11,** iii, 118-25; 191-98. **Imms, A. D.**—Observations on the insect parasites of some Coccidae. **86,** lxiii, 293-374. **MacGillivray, A. D.**—Leucopelmonus confusus. **4,** 1919, 33-5.

Cockerell, T. D. A.—[Four] new and little known American bees. **4,** 1919, 26-8. **Gahan, A. B.**—A new gen. of chalcid-wasp belonging to the family Eulophidae [1 new sp.]. **10,** xxi, 2-4. **Rohwer, S. A.**—Descriptions of 3 parasites of Agrilus angelicus. **10,** xxi, 4-8. **Roman, A.**—Ichneumoniden aus West-Groenland [2 new]. **87,** x, No. 22.

Doings of Societies.

Entomological Section of The Academy of Natural Sciences of Philadelphia.

Meeting of November 21, 1918. Director Philip Laurent in the chair, ten persons present. The death of Mr. Erich Daecke, an Associate, was announced.

Mr. Rehn called attention to the valuable work being done by C. D. Sherborn in establishing the dates of issue of many of the works of early authors which were issued in parts.

Hymenoptera. Mr. Cresson exhibited a nest of small bees found in a dye-wood log from Tehuantepec, Central America. Mr. Rehn

spoke of the work of Dr. Bequaert in the Belgian Congo, especially his Revision of the Vespidae from that region. The speaker called attention to the homely but expressive remarks regarding the similarity in the different color phases existing in the wasps of widely separated genera. The peculiar structure observed at the base of the abdomen of some species, which Dr. Bequaert termed acarid cavities, was commented on by the speaker.

Lepidoptera. Mr. Laurent exhibited a series of 15 female specimens of *Eurymus* (*Colias*) *philodice*, collected at Mt. Airy, Philadelphia, which showed great variation in the presence and absence of yellow scales in the black border of the anterior wings. Specimen No. 1 has the border entirely black without a yellow scale, while No. 15 has nearly as much yellow as black.—E. T. Cresson, Jr., *Recorder.*

Feldman Collecting Social.

Meeting of December 18, 1918, at the residence of H. W. Wenzel, 5614 Stewart St., Philadelphia. Nine members present, Mr. Ernest Baylis, of this city, and Mr. Edgar Vandermark, of Falls Church, Va., visitors. Pres. H. W. Wenzel in the chair.

Coleoptera. Mr. Baylis exhibited some specimens he had collected, among the rare forms being: *Toxotus cylindricollis* Say, Pocono Lake, Pennsylvania, VII-31, *Acmaeops thoracica* Hald., Castle Rock, Pennsylvania, IV-16, and *Buprestis ultramarina* Say, Clementon, New Jersey, V-16. Dr. Castle exhibited a specimen of *Platynus larvalis* LeC. from Uniontown, Pennsylvania, IX-20, and an unnamed allied species from Port Columbia, Washington, VI-29-15; also a heavily marked race of *Cicindela hirticollis* Say from Kent Island, Maryland, VI-30.

Diptera. Mr. Hornig exhibited specimens illustrating life histories of nine species of local mosquitoes.

Lepidoptera. Mr. Laurent exhibited a number of Lepidoptera collected by Mr. H. W. Wenzel, among which was a specimen of *Plusia balluca* Geyer from West Philadelphia, VIII-20. The speaker stated that this was one of the most beautiful as well as one of the rarest Plusias found locally.

The 31st annual meeting was held January 15, 1919, at the same place. Eleven members were present, Messrs. H. B. Kirk and Josef N. Knull, of Harrisburg, Pennsylvania, visitors; Pres. H. W. Wenzel in the chair.

The President read his annual address, which was ordered to be incorporated in the minutes.

The present officers were re-elected to serve for 1919 and are as follows: *President,* H. W. Wenzel; *Vice-President,* Wm. S. Hunt-

ington; *Treasurer*, H. W. Wenzel; *Secretary*, Geo. M. Greene, and *Assistant Secretary*, J. Wagener Green.

Coleoptera. Messrs. Kirk and Knull detailed some of their methods of rearing Cerambycidae in the state insectary. Mr. Hornig exhibited a specimen of *Carabus nemoralis* Mull. which he collected in Germantown, Philadelphia, X-15-18. Dr. Castle exhibited from Uniontown, Pennsylvania, *Scaphinotus viduus* Dej., VII-10 to VIII-27, *S. germari* Chaud. VII-20 to VIII-25 and *S. ridingsii* Bland VII-10 to VIII-15. Mr. H. A. Wenzel spoke of sieving material collected from a swamp at Upper Darby, Delaware County, Pennsylvania, 1-5-19, and finding *Dicera pugionata* Germ. (previous records of which were beating alder in June and July) and *D. lurida* Fabr.; he was surprised to find them hibernating.

Orthoptera. Mr. Huntington mentioned a man from Sewell, New Jersey, who trapped roaches in his house by placing a sponge soaked with vinegar, over which was spread sugar and grated onions, in a screen trap which was placed in a dark room and proved a great success.

Diptera. Mr. Hornig said he had had a complaint from a house that many small flies were in the dining-room and found they were *Drosophila* in great numbers, but was unable to find the manner in which they bred.—Geo. M. Greene, *Sec'y*.

Ohio Entomological Workers.

The Annual State Meeting of Entomological Workers in Ohio Institutions was held in the Botany and Zoology Building, Ohio State University, Columbus, Ohio, on Thursday, January 30, 1919.

Brief addresses were made by Raymond C. Osburn, Head, Department of Zoology and Entomology, Ohio State University; H. A. Gossard, Entomologist, Experiment Station, and E. C. Cotton, Chief, Bureau of Horticulture.

The following reports and papers were presented: H. A. Gossard, Timely Notes; Herbert Osborn, Further Notes on Meadow Insects; W. C. Kraatz, A Study of *Scirtes tibialis* Guer.; W. M. Barrows, Grassland Spiders, Stratification in Associations; Robert K. Fletcher, A few notes on the Miridae of Meadows and Pastures; D. C. Mote, Report on Anthelmintic Experiments; T. H. Parks, The Bioclimatic Law (Law of Altitude, Latitude and Longitude) as Applied to Hessian Fly Control in Ohio; Edna Mosher, Some Interesting Beetle Larvae; A. J. Basinger, Preliminary Studies in Ohio Tachinidae; C. H. Young, Notes on Tropisternus glaber (Herbst); R. C. Osburn, The Onion Fly, Eumerus strigatus, in Ohio; J. S. Hine, The University Entomological Collections; J. S. Houser, An Undeveloped Profession.

J. S. Houser, *Secretary*.

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Will pay cash for Pars 39 and 52: Coleopterorum Catalogus, of Junk. Jos. O. Beauine, 3653 Notre Dame East, Montreal, Canada.

Wanted—Living and preserved material of Tabanid and other dipterous larvae and pupae. Tabanid larvae obtained by sifting soil at edge of ponds and streams. Packing in wet material, not water, each larva separate, in glass vials or tins. To preserve use boiling water, then alcohol. Exchange: Insects of all orders, or cash. Werner Marchand, 10 Dickinson St., Princeton, N. J.

Live Pupae of Sph. chersis, drupiferarum, luscitiosa, eremitus, Phil. achemon, Deid. inscripta, Paon. excaecatus, myops, Eac. imperialis, Cres. juglandis and others for exchange. Wanted—N. A. and Exotic Lepidoptera. Will pay cash for N. A. Catocalas. Herman J. Erb, 925 Hatch Ave., Woodhaven, Lg. Isl., New York.

Wanted for Cash or Exchange—Exotic Lycaenidae and some species from the U. S. Send me your offerta and lowest cash price. Paul N. Musgrave, 130 Oak Street, Clarksburg, W. Va.

Wanted—Syrphidae, Bombylidae and Coccinellidae from all parts of the world in exchange; also Florida insects for those from other regions. P. W. Fattig, Box 315, Gainesville, Fla.

Wanted—Phanaeus, Moneilema and Cleridae for cash or liberal exchange in rarities. Please send your lists to F. J. Psota, 316 So. Mozart St., Chicago.

Diurnal Lepidoptera—I have many desirable western species to exchange. Send lists of offerta. Dr. John Comstock, Southwest Museum, Marmion Way and Ave. 46, Los Angeles, Calif.

Certain Odonata Wanted.—The undersigned desires to examine Gomphus dilatatus and Enallagma pollutum from Florida and nearby States and will much appreciate a loan of such specimens. Please write before sending.—Philip P. Calvert, Zoological Lab'y., University of Pa., Philadelphia, Pa.

Wanted—Species of Dytiscidae, Haliplidae, Gyrinidae and Hydrophilidae, either for exchange or cash. Please send lists. Dr. Geo. W. Bock, 2904 Allen Ave., St. Louis, Mo.

Pentatomidae.—Would like to purchase North American material in this family of Hemiptera. G. Chagnon, P. O. Box 521, Montreal, Canada.

Wanted for Cash—Synopsis of the Erotylidae, by G. R. Crotch, Wm. Beutenmuller, 879 Whitlock Avenue, Bronx, New York, N. Y.

Wanted—Specimens of fleshy and woody fungi from which beetles have been collected, together with names of host trees, names of beetles, localities and dates. All specimens will be gratefully acknowledged and identified, and the information properly accredited. Harry B. Weiss, State Department of Agriculture, Trenton, N. J.

Wanted—Tipulidae from all parts of North America. Material from the far North especially desired. Will buy or exchange. Dr. W. G. Dietz, 21 North Vine Street, Hazleton, Pa.

Aradus.—I am engaged on a review of the North American species of this Hemipterous genus and shall be glad to examine specimens from any part of the continent. Determinations in return for specimens needed in my work.—H. M. PARSHLEY, Smith College, Northampton, Mass.

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2116.—**Cockerell** (T. D. A.).—Neocorynura, a new genus of Halictine bees. (Ent. News, **30**, 41-42, 1919)..... .10

LEPIDOPTERA.

2111.—**Hooker** (H. D.).—Notes on the life history of Epipsilia monochromata. (Ent. News, **30**, 61-63, 1 pl., 1919).... .10

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